## SEQUENCE LISTING

<110> Boehringer Ingelheim (Canada) Ltd.														
<120> Purified Active HCV NS2/3 Protease														
<130> 13/082														
<150> 60/256,031 <151> 2000-12-15														
<160> 21														
<170> FastSEQ for Windows Version 4.0														
<210> 1 <211> 1230 <212> DNA <213> HCV														
<220> <221> CDS <222> (1)(1230)														
<pre>&lt;400&gt; 1 atg gac cgg gag atg gct gca tcg tgc gga ggc gcg gtt ttc ata ggt   48 Met Asp Arg Glu Met Ala Ala Ser Cys Gly Gly Ala Val Phe Ile Gly 1</pre>														
ctt gca ctc ttg acc ttg tca cca tac tat aaa gtg ctc ctc gct agg 96 Leu Ala Leu Leu Thr Leu Ser Pro Tyr Tyr Lys Val Leu Leu Ala Arg 20 25 30														
ctc ata tgg tgg tta cag tat tta atc acc aga gtc gag gcg cac ttg Leu Ile Trp Trp Leu Gln Tyr Leu Ile Thr Arg Val Glu Ala His Leu 35 40 45														
caa gtg tgg atc ccc cct ctc aat gtt cgg gga ggc cgc gat gcc atc 192 Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile 50 55 60														
atc ctc ctc acg tgc gca gtc cac cca gag cta atc ttt gac atc acc  Ile Leu Leu Thr Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr  65 70 75 80														
aaa ctc ctg ctc gcc ata ttc ggt ccg ctc atg gtg ctc cag gca ggc 288 Lys Leu Leu Ala Ile Phe Gly Pro Leu Met Val Leu Gln Ala Gly 85 90 95														
ata acc aaa gtg ccg tac ttc gtg cgt gcg cag ggg ctc att cgt gcg 336  Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg Ala 100 105 110														
tgt atg ttg gtg cgg aag gct gcg ggg ggt cat tat gtc caa atg gcc 384 Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met Ala 115 120 125														

ttc Phe	atg Met 130	aag Lys	cta Leu	gct Ala	gcg Ala	ctg Leu 135	aca Thr	ggt Gly	acg Thr	tac Tyr	gtt Val 140	tat Tyr	gac Asp	cat His	ctc Leu	432
act Thr 145	cca Pro	ttg Leu	cag Gln	gat Asp	tgg Trp 150	gcc Ala	cac His	gcg Ala	ggc Gly	cta Leu 155	cga Arg	gac Asp	ctt Leu	gca Ala	gtg Val 160	480
gcg Ala	gta Val	gag Glu	ccc Pro	gtc Val 165	atc Ile	ttc Phe	tct Ser	gac Asp	atg Met 170	gag Glu	gtc Val	aag Lys	atc Ile	atc Ile 175	acc Thr	528
tgg Trp	Gly ggg	gcg Ala	gac Asp 180	acc Thr	gcg Ala	gca Ala	tgc Cys	999 Gly 185	gac Asp	atc Ile	att Ile	tca Ser	ggt Gly 190	ctg Leu	ccc Pro	576
gtc Val	tcc Ser	gct Ala 195	cga Arg	agg Arg	gga Gly	agg Arg	gag Glu 200	ata Ile	ctc Leu	ctg Leu	gga Gly	ccg Pro 205	gcc Ala	gat Asp	aat Asn	624
ttt Phe	gaa Glu 210	gly aaa	cag Gln	Gly 999	tgg Trp	cga Arg 215	ctc Leu	ctt Leu	gcg Ala	ccc Pro	atc Ile 220	acg Thr	gcc Ala	tac Tyr	tcc Ser	672
caa Gln 225	cag Gln	aca Thr	cgg Arg	ggc Gly	cta Leu 230	ctt Leu	ggt Gly	tgc Cys	atc Ile	atc Ile 235	acc Thr	agc Ser	ctc Leu	aca Thr	ggc Gly 240	720
cgg Arg	gac Asp	aag Lys	aac Asn	cag Gln 245	gtc Val	gag Glu	gly ggg	gag Glu	gtt Val 250	caa Gln	gtg Val	gtc Val	tcc Ser	acc Thr 255	gct Ala	768
aca Thr	caa Gln	tct Ser	ttc Phe 260	ctg Leu	gcg Ala	acc Thr	tgc Cys	gtc Val 265	aac Asn	ggc Gly	gtg Val	tgt Cys	tgg Trp 270	act Thr	gtc Val	816
 ttc Phe	cat His	ggc Gly 275	gcc Ala	ggc	tca <sup>.</sup> Ser	aag Lys	acc Thr 280	ttg Leu	gcc Ala	ggc Gly	ccc Pro	aaa Lys 285	ggc	cca Pro	atc Ile	864
acc Thr	cag Gln 290	Met	Tyr	act Thr	Asn	gtg Val 295	Asp	cag Gln	Asp	Leu	gtc Val 300	ggc Gly	tgg Trp	cag Gln	gcg Ala	912
ccc Pro 305	cct Pro	GJA aaa	gcg Ala	cgc Arg	tcc Ser 310	atg Met	aca Thr	cca Pro	tgc Cys	acc Thr 315	tgc Cys	ggc	agc Ser	tcg Ser	gac Asp 320	960
ctc Leu	tat Tyr	ttg Leu	gtc Val	acg Thr 325	Arg	cat His	gcc Ala	gac Asp	gtc Val 330	Ile	ccg Pro	gtg Val	cgc Arg	cgg Arg 335		1008
ggc	gac Asp	agt Ser	agg Arg 340	Gly	agc Ser	ctg Leu	ctc Leu	tcc Ser 345	Pro	agg Arg	cct Pro	gtc Val	tcc Ser 350	Tyr	ttg Leu	1056

												999 Gly 365				1104
												gca Ala				1152
gac Asp 385	ttc Phe	ata Ile	cct Pro	gtt Val	gag Glu 390	tct Ser	atg Met	gaa Glu	act Thr	acc Thr 395	atg Met	cgg Arg	act Thr	agt Ser	agc Ser 400	1200
_	tgg Trp	_		_	_											1230
<210> 2 <211> 409 <212> PRT <213> HCV <400> 2																
		Arg	Glu	Met 5	Ala	Ala	Ser	Cys	Gly 10	Gly	Ala	Val	Phe	Ile 15	Gly	
Leu	Ala	Leu	Leu 20	Thr	Leu	Ser	Pro	Tyr 25	Tyr	Lys	Val	Leu	Leu 30	Ala	Arg	
Leu	Ile	Trp 35	Trp	Leu	Gln	Tyr	Leu 40	Ile	Thr	Arg	Val	Glu 45	Ala	His	Leu	
Gln	Val 50		Ile	Pro	Pro	Leu 55		Val	Arg	Gly	Gly 60	Arg	Asp	Ala	Ile	
Ile 65		Leu	Thr	Cys	Ala 70	-	His	Pro	Glu	Leu 75		Phe	Asp	Ile	Thr 80	
	Leu	Leu	Leu	Ala 85		Phe	Gly	Pro	Leu 90	. –	Val	Leu	Gln	Ala 95		
Ile	Thr	Lys			Tyr	Phe	Val			Gln	Gly	Leu		Arg	Ala	
Сув	Met		100 Val	Arg	Lys	Ala		-105 Gly	Gly	His	Tyr	Val	110 Gln		Ala	- 7
Phe		115 Lys	Leu	Ala	Ala		120 Thr	Gly	Thr	Tyr		125 Tyr	Asp	His	Leu	
Thr	130 Pro	Leu										Asp				
145 Ala	Val	Glu		Val								Lys			160 Thr	
Trp	Gly	Ala	Asp	165 Thr	Ala	Ala	Cys	Gly	170 Asp	Ile	Ile	Ser		175 Leu	Pro	
Val	Ser	Ala	180 Arg	Arg	Gly	Arg	Glu	185 Ile	Leu	Leu	Gly	Pro	190 Ala	Asp	Asn	
Phe	Glu	195 Gly	Gln	Gly	Trp	Arq	200 Leu	Leu	Ala	Pro	Ile	205 Thr	Ala	Tyr	Ser	
	210	_				215					220				Gly	
225			•	_	230		_	_		235					240	
				245					250					255	Ala	
Thr	Gln	Ser	Phe 260	Leu	Ala	Thr	Cys	Val 265	Asn	Gly	Val	Cys	Trp 270	Thr	Val	

Phe	His	Gly 275	Ala	Gly	Ser	Lys	Thr 280	Leu	Ala	Gly	Pro	Lys 285	Gly	Pro	Ile	
	290	Met				295					300					
Pro 305	Pro	Gly	Ala	Arg	Ser 310	Met	Thr	Pro	Cys	Thr 315	Cys	Gly	Ser	Ser	Asp 320	
Leu	Tyr	Leu	Val	Thr 325	Arg	His	Ala	Asp	Val 330	Ile	Pro	Val	Arg	Arg 335	Arg	
Gly	Asp	Ser	Arg 340	Gly	Ser	Leu	Leu	Ser 345	Pro	Arg	Pro	Val	Ser 350	Tyr	Leu	
Lys	Gly	Ser 355	Ser	Gly	Gly	Pro	Leu 360	Leu	Cys	Pro	Ser	Gly 365	His	Ala	Val	
Gly	Ile 370	Phe	Arg	Ala	Ala	Val 375	Cys	Thr	Arg	Gly	Val 380	Ala	Lys	Ala	Val	
Asp 385		Ile	Pro	Val	Glu 390	Ser	Met	Glu	Thr	Thr 395	Met	Arg	Thr	Ser	Ser 400	
	Trp	Arg	His	Pro 405	Gln	Phe	Gly	Gly								
<211 <212	0> 3 L> 10 2> DI B> H0	AV														
	L> Cl	DS 1)	. (10	05)												
atq	0> 3 aaa Lys	aag Lys	aaa Lys	aag Lys 5	ctc Leu	gag Glu	cat His	cac His	cat His 10	cac His	cat His	cac His	act Thr	agt Ser 15	gca Ala	48
 ggc Gly	ata Ile	acc Thr	aaa Lys 20	Val	ccg Pro	tac Tyr	ttc Phe	gtg Val 25	cgt Arg	gcg Ala	cag Gln	gjà aaa	ctc Leu 30	Ile	cgt Arg	96
gcg Ala	tgt Cys	atg Met 35	ttg Leu	gtg Val	cgg Arg	aag Lys	gct Ala 40	gcg Ala	Gly aaa	ggt Gly	cat His	tat Tyr 45	gtc Val	caa Gln	atg Met	144
gcc Ala	ttc Phe 50	atg Met	aag Lys	cta Leu	gct Ala	gcg Ala 55	ctg Leu	aca Thr	ggt Gly	acg Thr	tac Tyr 60	gtt Val	tat Tyr	gac Asp	cat His	192
ctc Leu 65	act Thr	cca Pro	ttg Leu	cag Gln	gat Asp 70	Trp	gcc Ala	cac His	gcg Ala	ggc Gly 75	cta Leu	cga Arg	gac Asp	ctt Leu	gca Ala 80	240
gtg Val	gcg Ala	gta Val	gag Glu	ccc Pro 85	gtc Val	atc Ile	ttc Phe	tct Ser	gac Asp 90	Met	gag Glu	gtc Val	aag Lys	atc Ile 95	atc Ile	288
acc Thr	tgg Trp	Gly ggg	gcg Ala	Asp	acc Thr	gcg Ala	gca Ala	tgc Cys	Gly	gac Asp	atc Ile	att Ile	tca Ser 110	Gly	ctg Leu	336

													ccg Pro			384
													acg Thr			432
		_							_				agc Ser			480
													gtc Val			528
_					_			_	_				tgt Cys 190			576
_			~ ~	_			_		_	_			aaa Lys			624
													ggc			672
					_		_			_		_	Gly	_	_	720
													gtg Val			768
	_	_						_								
													gtc Val 270			816
													gjå aaa			864
													gca Ala			912
													cgg Arg			960
_	-		_		_	_			ggt Gly 330		_		aag Lys	taa *		1005
ggat	cc															1011

```
<210> 4
<211> 334
<212> PRT
<213> HCV
<400> 4
Met Lys Lys Lys Leu Glu His His His His His Thr Ser Ala
                                   10
Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg
           20
Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met
                           40
Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His
                       55
Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala
                   70
Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile
                                   90
               85
Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu
                               105
           100
Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp
                          120
Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr
                      135
                                          140
Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr
                  150
                                    155
Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr
            165
                                   170
Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr
                                                   190
                               185
     180
Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro
                           200
Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln
                        215
                                           220
Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser
                    230
                                       235
Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg
                                   250
Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr
                                265
Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala
                           280
Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala
                        295
Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser
                   310
                                       315
Ser Ala Trp Arg His Pro Gln Phe Gly Gly Lys Lys Lys
                                    330
```

<210> 5 <211> 20 <212> DNA

<213> HCV

<400> 5 ccatggaccg ggagatggct

	<212	> 6 > 63 > DN > HC	ΙA														
	<400 ggat cat		aa c	caco	gaac	t go	gggt	gacc	ı cca	ageg	gcta	ctag	gteeg	јса	tggta	igtttc	60 63
	<212	> 46 > DN															
	<400 gctc		at c	cacca	atcac	c at	caca	ctag	g tgo	aggo	ata	acca	ıaa				46
	<210> 8 <211> 45 <212> DNA <213> HCV																
i	<400	ι . Ω															
			gat c	ctta	acttt	t to	ettt	taco	acc	gaac	tgc	gggt	g				45
	<210> 9 <211> 45 <212> DNA <213> HCV																
	<400> 9 acctgccata tgaaaaagaa aaagctcgag catcaccatc accat															45	
	<210> 10 <211> 303 <212> PRT																
-	<21-3	5>- HC	CV -						-				-			-	-
		> 10		Thr	Lvc	Val	Pro	Туг	Dhe	Val	Δrα	בומ	Gln	Glv	Leu	Tle	
	1	_			5					10					15		
	Arg	Ala	Cys	Met 20	Leu	Val	Arg	Lys	Ala 25	Ala	Gly	Gly	His	Tyr 30	Val	Gln	
	Met	Ala	Phe 35	Met	Lys	Leu	Ala	Ala 40	Leu	Thr	Gly	Thr	Tyr 45	Val	Tyr	Asp	
	His	Leu 50	Thr	Pro	Leu	Gln	Asp 55	Trp	Ala	His	Ala	Gly 60	Leu	Arg	Asp	Leu	
			Ala	Val	Glu			Ile	Phe	Ser			Glu	Val	Lys		
	65 Ile	Thr		Gly	Ala 85	70 Asp	Thr	Ala	Ala	Cys	75 Gly	Asp	Ile	Ile	Ser 95	80 Gly	
	Leu	Pro	val			Arg	Arg	Gly			Ile	Leu	Leu		Pro	Ala	
	Asp	Asn	Phe	100 Glu	Gly	Gln	Gly	Trp 120	105 Arg	Leu	Leu	Ala	Pro 125	110 Ile	Thr	Ala	
	Tyr	Ser 130		Gln	Thr	Arg	Gly 135		Leu	Gly	Cys	Ile 140		Thr	Ser	Leu	

```
Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser
                    150
                                       155
Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp
                                   170
Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly
                                                    190
                               185
Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp
                           200
        195
Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser
                        215
Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg
                                        235
                    230
Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser
               245
                                    250
Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His
                                265
            260
Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys
                           280
Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
                       295
<210> 11
<211> 393
<212> PRT
<213> HCV
<400> 11
Met Ala Ala Ser Cys Gly Gly Ala Val Phe Ile Gly Leu Ala Leu Leu
                                   10
Thr Leu Ser Pro Tyr Tyr Lys Val Leu Leu Ala Arg Leu Ile Trp Trp
                                25
Leu Gln Tyr Leu Ile Thr Arg Val Glu Ala His Leu Gln Val Trp Ile
                            40
Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile Ile Leu Leu Thr
                        55
Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr Lys Leu Leu
                                        75
Ala Ile Phe Gly Pro Leu Met Val Leu Gln Ala Gly Ile Thr Lys Val
                                    90
Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg Ala Cys Met Leu Val
                                105
Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met Ala Phe Met Lys Leu
                            120
Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu Thr Pro Leu Gln
                                            140
                        135
Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro
                                        155
                    150
Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile Thr Trp Gly Ala Asp
                                    170
Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu Pro Val Ser Ala Arg
                                                    190
            180
                                185
Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Asn Phe Glu Gly Gln
```

200 Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr Arg

Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn

215

230

205

220

```
Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala Thr Gln Ser Phe
                                    250
                245
Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val Phe His Gly Ala
                                265
                                                    270
            260
Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile Thr Gln Met Tyr
                                                285
                            280
        275
Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala Pro Pro Gly Ala
                        295
Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val
                                        315
                    310
Thr Arq His Ala Asp Val Ile Pro Val Arg Arg Gly Asp Ser Arg
                325
                                    330
Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu Lys Gly Ser Ser
            340
                                345
Gly Gly Pro Leu Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg
                                                365
                            360
Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro
                        375
Val Glu Ser Met Glu Thr Thr Met Arg
                    390
<210> 12
<211> 380
<212> PRT
<213> HCV
<400> 12
Ala Leu Leu Thr Leu Ser Pro Tyr Tyr Lys Val Leu Leu Ala Arg Leu
                                  10
                5
Ile Trp Trp Leu Gln Tyr Leu Ile Thr Arg Val Glu Ala His Leu Gln
Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile Ile
Leu Leu Thr Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr Lys
Leu Leu Leu-Ala-Ile Phe Gly Pro Leu Met Val Leu-Gln Ala Gly Ile-
                    70
Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg Ala Cys
                                    90
Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met Ala Phe
            100
                                105
Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu Thr
                            120
                                                125
Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val Ala
                                            140
Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile Thr Trp
                                        155
                    150
Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu Pro Val
                                    170
Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Asn Phe
                                                    190
            180
                                185
Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser Gln
                            200
Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg
                                            220
                        215
Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala Thr
```

230

225

```
Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val Phe
                                    250
               245
His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile Thr
                                265
                                                    270
            260
Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala Pro
                           280
        275
Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu
                        295
Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Gly
                    310
                                        315
Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu Lys
                325
                                 330
Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val Gly
                               345
            340
Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp
                           360
Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
                        375
<210> 13
<211> 352
<212> PRT
<213> HCV
<400> 13
Ala His Leu Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg
                                   10
                5
Asp Ala Ile Ile Leu Leu Thr Cys Ala Val His Pro Glu Leu Ile Phe
                                25
Asp Ile Thr Lys Leu Leu Leu Ala Ile Phe Gly Pro Leu Met Val Leu
Gln Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu
Ile Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val
                    70
                                        75
Gln Met Ala-Phe Met Lys Leu Ala Ala-Leu Thr Gly Thr Tyr Val Tyr
                                    90
Asp His Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp
                                1.05
Leu Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys
                            120
Ile Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser
                        135
Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro
                    150
                                        155
Ala Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr
                                    170
                165
Ala Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser
           180
                                185
Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val
                            200
Ser Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys
                                            220
                       215
Trp Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys
                                       235
                   230
Gly Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly
```

245

```
Trp Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly
           260
                               265
Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val
                           280
                                               285
       275
Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val
                       295
                                            300
Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly
                   310
                                       315
His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala
                                   330
               325
Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
           340
                               345
<210> 14
<211> 341
<212> PRT
<213> HCV
<400> 14
Val Arg Gly Gly Arg Asp Ala Ile Ile Leu Leu Thr Cys Ala Val His
Pro Glu Leu Ile Phe Asp Ile Thr Lys Leu Leu Ala Ile Phe Gly
                               25
Pro Leu Met Val Leu Gln Ala Gly Ile Thr Lys Val Pro Tyr Phe Val
                            40
Arg Ala Gln Gly Leu Ile Arg Ala Cys Met Leu Val Arg Lys Ala Ala
                       55
Gly Gly His Tyr Val Gln Met Ala Phe Met Lys Leu Ala Ala Leu Thr
                                        75
                    70
Gly Thr Tyr Val Tyr Asp His Leu Thr Pro Leu Gln Asp Trp Ala His
                85
Ala Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Ile Phe Ser
           100
                                105
Asp Met Glu Val Lys Ile Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys
                            120
Gly Asp-Ile-Ile Ser-Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu
                        135
                                           140
Ile Leu Leu Gly Pro Ala Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu
                                        155
                    150
Leu Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly
                                    170
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
                                185
Glu Val Gln Val Val Ser Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys
                            200
Val Asn Gly Val Cys Trp Thr Val Phe His Gly Ala Gly Ser Lys Thr
                                            220
                        215
Leu Ala Gly Pro Lys Gly Pro Ile Thr Gln Met Tyr Thr Asn Val Asp
                    230
                                       235
Gln Asp Leu Val Gly Trp Gln Ala Pro Pro Gly Ala Arg Ser Met Thr
                                    250
                245
Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
                                                    270
                               265
           260
Asp Val Ile Pro Val Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu
                           280
                                                285
Ser Pro Arg Pro Val Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
```

```
Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met
                                   330
                325
Glu Thr Thr Met Arg
            340
<210> 15
<211> 292
<212> PRT
<213> HCV
<400> 15
Ala Gln Gly Leu Ile Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly
                                    10
Gly His Tyr Val Gln Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly
                                25
Thr Tyr Val Tyr Asp His Leu Thr Pro Leu Gln Asp Trp Ala His Ala
                            40
Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp
                       55
Met Glu Val Lys Ile Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly
                    70
                                        75
Asp Ile Ile Ser Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile
                                   90
Leu Leu Gly Pro Ala Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu
                                                    110
                               105
Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys
                                                125
                           120
Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu
                                            140
                       135
Val Gln Val Val Ser Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val
                    150
                                        155
Asn Gly Val Cys Trp Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu
                                    170
                165
Ala Gly Pro Lys Gly Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln
                                185
                                                    190
            180
Asp Leu Val Gly Trp Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro
                                                205
                            200
Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp
                                            220
                        215
Val Ile Pro Val Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser
                                        235
                    230
Pro Arg Pro Val Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu
                                    250
                245
Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr
                                265
            260
Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu
                            280
Thr Thr Met Arg
```

Leu Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys

315

310

```
<210> 16
<211> 303
<212> PRT
<213> HCV
<400> 16
Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile
Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln
Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp
Ala Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu
Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile
                    70
Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly
               85
Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala
                                105
Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala
                            120
                                               125
Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu
                       135
                                            140
Thr Gly Arg Asp Lys Asn Gln Val Glu Glu Val Gln Val Val Ser
                                        155
                   150
Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp
                                    170
                                                         175
                165
Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly
                                185
            180
Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp
                            200
Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser
                        215
                                            220
Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg
                                        235
                    230
Arg Arg Gly Asp Ser-Arg Gly Ser-Leu Leu Ser Pro Arg Pro Val Ser
                                    250
                245
Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His
                                265
            260
Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys
                            280
Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
<210> 17
<211> 301
<212> PRT
<213> HCV
<400> 17
Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile
                                    10
Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln
                                25
            20
Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp
```

```
His Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu
                                            60
                        55
Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile
                    70
                                        75
Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly
               85
                                    90
Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala
                               105
            100
                                                    110
Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Pro Ile Thr Ala Tyr Ser
                            120
                                                125
       115
Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly
                        135
                                            140
Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala
                    150
                                        155
Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val
                                    170
Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile
            180
                                185
Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala
                                               205
                            200
        195
Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser Asp
                       215
                                            220
Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg
                                       235
                   230
Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu
               245
                                   250
                                                        255
Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val
                               265
Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val
                            280
Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
                        295
```

<210> 18 <211> 303 -<212> PRT-

<213> HCV

 The Trp Gly Ala Asp Thr Ala Ala Ala Gly Asp Tie Tie Ser Gly

 85
 90
 95

 Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala
 100
 105
 110

 Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala
 115
 120
 125

 Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu

```
Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Ser
                      150
                                          155
  Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp
                                      170
                                                           175
  Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly
                                                       190
                                  185
   Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp
                              200
          195
   Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser
                           215
                                               220
   Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg
                                           235
                       230
   Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser
                   245
                                       250
   Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His
                                                      270
                                   265
              260
   Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys
                               280
                                                   285
   Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
                                               300
                          295
      290
   <210> 19
   <211> 11
   <212> PRT
   <213> HCV
   <220>
   <221> VARIANT
   <222> (1) ...(1)
   <223> Asp labeled with anthranilyl
   <221> VARIANT
   <222> (6)...(6)
   <223> Xaa at position 6 is Abu
<221> VARIANT
   <222> (6)...(7)
   <223> Abu-A between 6 and 7 is C(0)-O
   <221> VARIANT
   <222> (9)...(9)
   <223> Tyr at position 9 is derivatized with 3-NO2
   <400> 19
   Asp Asp Ile Val Pro Xaa Ala Met Tyr Thr Trp
                   5
    1
   <210> 20
   <211> 6
   <212> PRT
   <213> HCV
   <220>
   <221> VARIANT
   <222> (1)...(1)
   <223> Asp labeled with anthranilyl
```